



Agenda Item 2: Report of the activities carried out to date since the last REDDIG Coordination Committee meeting

REPORT ON ACTIVITIES PERFORMED SINCE THE LAST MEETING OF THE COORDINATION COMMITTEE

(Presented by the Secretariat)

SUMMARY

This working paper contains information on the activities carried out by the project since the last meeting of the REDDIG Coordination Committee, held on 9-10 March 2009.

ICAO strategic objectives:	<i>A – Safety; and C – Environmental protection and sustainable development of air transport.</i>
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1. Background

1.1 The main activities carried out since the last meeting of the REDDIG Coordination Committee (RCC/13, 9–10 March 2010), in addition to network operation, support, and maintenance, were as follows:

- a) Follow-up on activities for the implementation of the MEVA II/REDDIG interconnection;
- b) 2010 training programme;
- c) Alternating operation of NCCs and management centre;
- d) Implementation of new services;
- e) Study of the new digital network as a total renewal plan of the REDDIG platform; and
- f) Logistics and spare part management.

2. Analysis

Follow-up on activities for the implementation of the MEVA II / REDDIG interconnection

2.1 The description of activities referring to MEVA II / REDDIG interconnection are found in WP/08.

2010 training programme and technical-operational meeting

2.2 Continuing with the training plan for REDDIG technical personnel, Technical-Operative Meeting on Communications Networks and Data Transmission was held in Lima, Peru, from 11 to 15 October 2010, at the Civil Aviation Training Centre (CATC) of CORPAC S.A. The programme for this course is shown in **Appendix A** to this working paper.

2.3 The development of the meeting's academic portion was in charge of two instructors hired by CORPAC S.A. In addition, valuable presentations were made by INEO Engineering & Systems (France) and SES Electronic Systems (Argentina), on satellite communications systems technology and trend.

2.4 The meeting also received a presentation and explanation on how REDDIG is providing the network service to the various IP protocol based aeronautical applications.

2.5 The total number of attendees was 38 delegates from Argentina, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Trinidad & Tobago, Uruguay and Venezuela, plus one international organization, COCESNA.

2.6 16 scholarships were given out to allow delegates to participate in the meeting.

Alternating operation of NCCs and management centres

2.7 The initial planning for the alternating operation of the NCC could not be carried out, mainly due because the SAEZ station did not count with monitoring and control (M&C) facilities, due to small failures in both of its SSPA amplifiers. These facilities, in events necessary, can be required for the network synchronization.

2.8 Nevertheless, only the reference carrier was temporarily switched from the Manaus to the Ezeiza station during the solar conjunction periods.

Implementation of new services

2.9 PVC for radar data exchange: Argentina–Uruguay: In March 2010 a new PVC virtual circuit was created between Argentina and Uruguay for the Exchange of radar data with IP protocol, and since December 2010, the SAEZ station receives data (raw) from the Durazno (Uruguay) radar ub Asterix format over IP protocol.

2.10 ATSa circuit between Colonia, Uruguay and Buenos Aires/Aeroparque, Argentina: A spare voice port, destined for Colonia, was activated in the SUMU station. This circuit is operational since August 2010.

2.11 PVC for AMHS trials between the Manaus, Brazil and Buenos Aires/Ezeiza, Argentina MTAs: The existing PVC was installed at the beginning of August 2010 to this end, and AMHS tests were carried out between the Manaus and Ezeiza MTAs.

2.12 PVC for AMHS between Argentina and Brazil: At the end of August 2010, and upon request from the Brazilian administration, a PVC was established between the Curitiba (SBCT) and Ezeiza (SAEZ) stations for AMHS between both States. This circuit has been tried at network level (router). Up to the end of 2010, no interconnection tests have been made between the corresponding MTAs.

2.13 AMHS between Colombia and Peru: AMHS traffic is operational and satisfactory since 8 November 2010. It is important to mention that this is the first operational implementation of this service in the CAR/SAM Regions.

Study of the new digital network as a total renewal plan of the REDDIG platform

2.14 This activity was carried out under RLA/06/901 project, and its results are presented under WP/07.

Logistics and spare part management

2.15 Logistics, mainly activated by equipment failures, entails the delivery of equipment or parts from the REDDIG spare part stock in the warehouse located at the Lima Regional Office or from any other node to the nodes that require them; coordinating with the manufacturers for the repair of the equipment; payment for transportation of equipment or parts; payment to manufacturers for repair of equipment; coordinating with and supporting the States for the import/export of the equipment and parts needed at the nodes. This support also includes the purchase and transportation of equipment on behalf of the States for their corresponding nodes.

2.16 In 2010, twenty-six logistics operations were conducted.

Summary of equipment and part failures:

FRAD Manufacturer: Memotec

- (1) Universal I/O Card : (1) SAEZ
- (1) Motherboard CX950 : (1) SYGC
- (7) FXS SLIM Card : (6) SYGC, (1) SVMI
- (6) Internal Fan : (2) SUMU, (2) SAEZ, (1) SCEL, (1) SGAS

MODEM Manufacturer: ViaSat

- (8) Quad Output P.S. : (2) SBCT, (1) SYGC, (1) SUMU, (1) SAEZ, (1) SBRF
(1) SBMN, (1) SMPM
- (3) Terminal LW2100 : (1) SCEL, (1) SGAS, (1) COCESNA
- (1) Internal fan : (1) SBCT

SSPA Manufacturer: Paradise Datacom

- (1) M&C : (1) SMPM
- (1) Amplifier : (1) SAEZ

Others - REDDIG

- (1) Converter RS485/232 : (1) SCEL

2.17 Taking into account that the Linkway 2100 modem manufacturer has discontinued this equipment, as informed at RCC/13 meeting, the REDDIG administration made a thorough search of this equipment in the international market and purchased in November 2010, through ICAO, two (2) refurbished Linkway 2100 modems to Bell Enterprise (United States). The FOB USA value for the equipment was USD3,500. This equipment is part of the REDDIG spare parts lot.

2.18 In addition, in view that two 40W SSPAA were replaced by two new 75W SSPA in order to meet the technical requirements for MEVA II / REDDIG interconnection, the two 40W SSPA will be included in the REDDIG spare parts lot. Up to the end of 2010, this equipment had not been included in the ICAO SAM Regional Office's storage.

2.19 **Appendix B** to this working paper shows the statistics for 2010 on the numbers of the main repairs of network nodes as well as their distribution in terms of type of equipment requiring the service.

2.20 **Appendix C** to this working paper presents a network availability chart up to the end of 2010.

3. **Suggested action**

3.1 The Meeting is invited to:

- a) Take note of the information provided;
- b) Analyse the activities carried out by REDDIG RLA/03/901 project in 2010, and presented in Section 2 of this working paper, and formulate recommendations on this regard, if necessary; and
- c) Analyse any other consideration that the Meeting may deem appropriate in connection with this agenda item.

APPENDIX A

**REGIONAL PROJECT RLA/03/901
REDDIG MANAGEMENT SYSTEM AND SATELLITE SEGMENT ADMINISTRATION**

**TECHNICAL-OPERATIVE MEETING ON COMMUNICATIONS NETWORKS
AND DATA TRANSMISSION
(Lima, Peru, 11-15 October 2010)**

SCHEDULE AND AGENDA OF THE EVENT

Hours	Monday 11
08:00 - 09:00	08:00 Registry
	08:45 Inaugural Session
09:00 – 10:45	<p>-- Introduction --</p> <p>1 Communications systems generalities</p> <ul style="list-style-type: none"> a. Data transmission b. Networks and their criteria c. Protocols and standards <p>2 Basic concepts</p> <ul style="list-style-type: none"> a. Link configuration b. Topology c. Transmission mode d. Network classes
10:45 - 11:00	<i>Coffe break</i>
11:00 - 12:45	<p>3 Signals, Coding and Modulation</p> <ul style="list-style-type: none"> a. Digital signals b. Analogical to digital conversion c. Digital to analogical conversion <p>4 Error correction and link control</p> <ul style="list-style-type: none"> a. Type of errors b. Detection and error correction c. Flux control d. Error control
12:45 - 13:30	<i>Break for lunch</i>
13:30 - 15:00	<p>5 Data transmission interfaces</p> <p>6 Data transmission media</p> <ul style="list-style-type: none"> a. Guided media (Plaited pair cable, coax cable, wave guide and optical fibre) b. Non-guided media (radio frequency and propagation, microwaves, via satellite) c. Transmission deterioration d. Media comparison
15:00 – 15:15	<i>Coffe break</i>

15:15 – 17:00	<p>7 Multiplexation</p> <ul style="list-style-type: none"> a. Frequency division (FDM) b. Time division (TDM) c. Applications and ranks <p>8 OSI Mode</p> <ul style="list-style-type: none"> a. Architecture and model levels b. Functions and levels interconnection
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Horario	Tuesday 12
09:00 – 10:45	<p>9 Data Link Protocols</p> <ul style="list-style-type: none"> a. Asynchronical and synchronic protocols b. Character-oriented protocols c. Bit-oriented protocols (HDLC) <p>10 LAN networks</p> <ul style="list-style-type: none"> a. Architecture types b. Access methods
10:45 - 11:00	<i>Coffe break</i>
11:00 - 12:45	<p>11 LAN networks</p> <ul style="list-style-type: none"> c. 802 Project and standards d. Network comparison <p>12 Commuting</p> <ul style="list-style-type: none"> a. Circuits commuting b. Packages commuting c. Messages commuting <p>13 Telephone network applications</p> <ul style="list-style-type: none"> a. PPP protocol b. ISDN service
12:45 - 13:30	<i>Break for lunch</i>
13:30 - 15:00	<p>13 Frame Relay (Plot retransmission)</p> <ul style="list-style-type: none"> a. Operation b. Levels and congestion control
15:00 – 15:15	<i>Coffe break</i>
15:15 – 17:00	<p>13 Frame Relay (Frame retransmission)</p> <ul style="list-style-type: none"> c. Traffic control d. REDDIG Applications and use

Horario	Wednesday 13
09:00 – 10:45	14 Network devices and networks interconnection <ul style="list-style-type: none"> a. Repeaters b. Bridges c. Routers and algorithm d. Protocol converters (Gateways)
10:45 - 11:00	<i>Coffe break</i>
11:00 - 12:45	15 TCP/IP Protocols set <ul style="list-style-type: none"> a. TCP/IP – Internet – OSI
12:45 - 13:30	<i>Break for lunch</i>
13:30 - 15:00	15 TCP/IP Protocols set <ul style="list-style-type: none"> b. Network level - IP Protocol c. Addressing and sub-networks
15:00 – 15:15	<i>Coffe break</i>
15:15 – 17:00	15 TCP/IP Protocols set <ul style="list-style-type: none"> d. Other protocols at network level e. Transportation level

Horario	Thursday 14
09:00 – 10:45	15 TCP/IP Protocols set <ul style="list-style-type: none"> f. Client – server model
10:45 - 11:00	<i>Coffe break</i>
11:00 - 12:45	15 TCP/IP Protocols set <ul style="list-style-type: none"> g. Client – server applications: TELNET, FTP, SMTP, SNMP h. IPv4 and IPv6
12:45 - 13:30	<i>Break for lunch</i>

13:30 - 15:00	15 TCP/IP Protocols set i. Routers programming
15:00 – 15:15	<i>Cofffe break</i>
15:15 – 17:00	15 Set TCP / IP protocols j. REDDIG applications and uses

Horario	Friday 15
09:00 – 10:45	Aeronautical Communications Networks Presentation by INEO a. New technologies and trends in satellite networks b. Voice satellite communications for ground-air service
10:45 - 11:00	<i>Cofffe break</i>
11:00 - 12:45	16 IP aeronautical applications a. AMHS
12:45 - 13:30	<i>Break for lunch</i>
13:30 - 15:00	16 IP aeronautical applications b. Radar data exchange
15:00 – 15:15	<i>Cofffe break</i>
15:15 – 17:00	16 IP aeronautical applications c. GNSS d. CNS/ATM applications integration Certificates and Closing







